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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,506	10/29/2003	Sheldon Aronowitz	02-5804/LSI1P212	8055

24319 7590 08/23/2006

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EXAMINER

CHEN, BRET P

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,506

Applicant(s)

ARONOWITZ ET AL.

Examiner

B. Chen

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-18 and 23-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-18 and 23-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-12, 14-18, 23-28 are pending in this application. Amended claims 2, 26-28 and newly added claims 29-38 are noted.

The amendment dated 6/6/06 has been entered and carefully considered. The examiner appreciates the amendments to the claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 25-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, the phrase “selectively ionizing the vaporized metallic element or salt to generate a plasma” is deemed new matter. While selectively ionizing is briefly mentioned on p.8, there appears to be no support for said phrase in the specification as originally filed. The same issue applies to claims 25-28.

In claim 2, the phrase “in atomic layer thicknesses within the chamber” is deemed new matter as there is no support for said phrase in the original specification.

Claims 1 and 25-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claim 1, the phrase “selectively ionizing the vaporized metallic element or salt to generate a plasma” does not enable one skilled in the art to selectively ionize a material without undue experimentation. The same issue applies to claims 25-28.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, the phrase “atomic layer thicknesses” is deemed vague and indefinite. It is not clear what atomic layer thicknesses are. For example, is nanometers considered atomic layer thickness? Clarification and appropriate amendments are requested.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 2-12, 14-18, 29-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oren et al. (4,742,022) for the reasons listed in the previous office action.

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In newly added claims 30-38, the applicant requires specific materials. It is first noted that the reference clearly teaches the use of a semiconductor substrate. One skilled in the art would know that silicon is a well known semiconductor substrate. It would have been obvious to one skilled in the art to utilize silicon as the substrate because Oren teaches the successful deposition onto a semiconductor substrate.

It is further noted that Oren teaches the production of zinc vapor. One skilled in the art would realize that metals behave similarly when in the same class. Since Zn is a Group 2 element, one skilled in the art would reasonably expect that other Group 2 materials including Ca, Sr, Ba, Cd would behave similarly. It would have been obvious to incorporate Group 2 materials with the expectation of obtaining similar results.

With respect to Mn and Nb, it is noted that these are well known metals. One skilled in the art would realize that metals behave similarly and that one can substitute one metal for another in many different applications. It would have been obvious to substitute one metal for another with the expectation of success.

Claims 2-12, 14-18, 29-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kogai et al. (6,416,862) for the reasons listed in the previous office action.

In newly added claims 30-38, the applicant requires specific materials. This issue has been addressed above.

Response to Arguments

Applicant's arguments filed 6/6/06 have been fully considered but they are not persuasive.

Applicant first argues that the specification clearly support selectively ionizing to generate a plasma (p.8).

The examiner disagrees. The examiner is still unable to find and applicant has not cited where “selectively ionizing a vaporized metallic element or salt to generate a plasma”. The examiner understands that paragraph 27 briefly discusses selectively ionizing but there is no recitation that the vaporized material is used to generate a plasma.

Appellant next argues that Oren fails to teach a vaporization technique to form a layer one atom thick (paragraph bridging pp.10-11). The same argument is provided on p.12 with respect to the Kogai reference.

The examiner agrees in part. While the examiner agrees that the prior art references fail to teach forming a layer one atom thick, it is noted that nowhere in the instant claims is there any mention of a monoatomic layer thickness. Hence, applicant's arguments are not commensurate in scope with the instant claims. An appropriate amendment reciting same would obviate the present art rejection. Specifically, if the applicant were to amend the present claims to recite selectively ionizing to generate a plasma and depositing the ionized material onto a substrate to one atom thickness AND establish that selectively ionizing a material to generate a plasma is not new matter, the examiner will pass this case to issue.

Applicant's arguments have been considered but are not deemed persuasive.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bc
8/18/06


BRET CHEN
PRIMARY EXAMINER